

Claims

1. A filter product comprising filtration media and a frame assembly provided along at least a portion of the filtration media, the filter product having an input face and an output face of the filtration media for permitting carrier fluid to pass therethrough while removing a filtrate component, the frame assembly comprising:

a support frame having a length and extending along at least the portion of the filtration media, the support frame comprising a plurality of media engagement elements arranged in supporting contact with and proximal to an edge of the filtration media on a first side of the filtration media; and

a hold down frame having a length and extending along at least the portion of the filtration media, the hold down frame comprising a plurality of media engagement elements arranged in supporting contact with and proximal to the edge of the filtration media on a second side of the filtration media;

wherein the support frame and hold down frame are interactively assembled together to provide the frame assembly proximal to at least a portion of the edge of the filtration media with the media engagement elements of the support frame interacting with the media engagement elements of the hold down frame to support the filtration media in between by contacting the filtration media at its first and second sides, and at least one of the support frame and the hold down frame further includes a wall portion spaced from its media engagement elements so as to define a channel positioned to run along the portion of the edge of the filtration media.

2. The filter product of claim 1, wherein the filtration media is positioned within a compression zone between the media engagement elements of the support frame and the hold down frame and further extends beyond the compression zone toward the wall portion that is spaced from the media engagement elements.

3. The filter product of claim 2, wherein the filtration media extends toward the wall portion by a distance at least equal to twice the thickness of the filtration media.

4. The filter product of claim 2, wherein the support frame and the hold down frame each comprise at least one side frame component and an end frame component with each side frame component comprising the plurality of media engagement elements arranged in series along the side frame component.

5. The filter product of claim 4, wherein the media engagement elements comprise tooth-like projections defining a series of peaks and troughs, and side media engagement elements of the supporting frame mesh with side media engagement elements of the hold down frame.

6. The filter product of claim 5, wherein the support frame and the hold down frame each comprise a pair of space side frame components and a pair of end frame components with each side frame component comprising the plurality of media engagement elements arranged in series along the side frame components, and the media engagement elements comprise tooth-like projections defining a series of peaks and troughs so that side media engagement elements of the supporting frame mesh with side media engagement elements of the hold down frame.

7. The filter product of claim 6, wherein the filtration media comprises a pleated media positioned between the side media engagement elements of the support frame and the hold down frame on spaced sides of the filter product, wherein the supported filtration media extends beyond the side media engagement elements.

8. The filter product of claim 7, wherein the pleated media comprises particulate matter within its composition.

9. The filter product of claim 7, wherein each support frame side component comprises a sidewall that is spaced from its respective side media engagement elements by a wall portion interconnected between the side media engagement elements and the spaced sidewall so as to define a channel in between.

10. The filter product of claim 9, wherein the side media engagement elements of the support frame extend at an angle away from the sidewall on each support frame side component.

11. The filter product of claim 9, wherein each hold down frame side component comprises a gasket side wall that is spaced from its respective side media engagement elements by another wall portion interconnected between the side media engagement elements and the spaced gasket side wall to define a channel in between, and the side wall of the support frame is positioned within the side wall channel of the hold down frame.

12. The filter product of claim 11, further comprises a releasable snap connection between the side wall of at least one support frame side component and the gasket side wall of at least one hold down frame side component.

13. The filter product of claim 12, wherein the snap connection comprising a flange extending from the side wall of at least one support frame side component and a lock protrusion that extends from the gasket side wall of the hold down frame side component within the hold down frame side channel to releasably lock the flange within a space defined by the lock protrusion within the hold down frame side channel.

14. The filter product of claim 13, wherein the lock protrusion includes a sloped lock surface to fit beneath the flange, which slope increases the space defined by the lock protrusion within the hold down frame side channel as the sloped lock surface extends from the gasket side wall.

15. The filter product of claim 11, wherein the side media engagement elements of the hold down frame extend at an angle away from the gasket side wall on each hold down frame side component.

16. The filter product of claim 15, wherein the gasket side wall includes a flared portion that comprises at least a portion of an application mounting gasket of the filter product.

17. The filter product of claim 4, wherein the end frame components of the support frame and the hold down frame include end media engagement elements that extend toward one another and define a filtration media compression zone between them for securing the filtration media in place proximal to an end of the filtration media.

18. The filter product of claim 17, wherein the end frame component of the support frame comprises an end wall spaced from its end media engagement element by a wall portion so as to define a channel in between, and the end media engagement element extends at an angle away from the spaced end wall.

19. The filter product of claim 18, wherein the end component of the hold down frame comprises a gasket end wall spaced from its end media engagement element by a wall portion so as to define a channel in between, and the end wall of the support frame is positioned within the end wall channel of the hold down frame.

20. The filter product of claim 19, wherein the gasket end wall includes a flared portion that comprises at least a portion of an application mounting gasket of the filter product.

21. A filter product comprising filtration media and a frame assembly provided along at least a portion of the filtration media, the filter product having an input face and an output face of the filtration media for permitting carrier fluid to pass therethrough while removing a filtrate component, the frame assembly comprising:

a support frame having a length and extending along at least the portion of the filtration media, the support frame comprising a wall portion and at least one media engagement element spaced from the wall portion and arranged in supporting contact

with and proximal to an edge of the filtration media on a first side of the filtration media;
and

a hold down frame having a length and extending along at least the portion of the filtration media, the hold down frame comprising a wall portion and at least one media engagement element spaced from the wall portion and arranged in supporting contact with and proximal to the edge of the filtration media on a second side of the filtration media;

wherein the support frame and hold down frame are interactively assembled together to provide the frame assembly proximal to at least a portion of the edge of the filtration media with the media engagement elements of the support frame interacting with the media engagement elements of the hold down frame to support the filtration media inbetween by contacting the filtration media at its first and second sides, and the wall portion of one of the support frame and the hold down frame is positioned between the media engagement element and wall portion of the other.

22. A filter product comprising filtration media and a frame assembly provided along at least a portion of the filtration media, the filter product having an input face and an output face of the filtration media for permitting carrier fluid to pass therethrough while removing a filtrate component, the frame assembly comprising:

a support frame having a length and extending along at least the portion of the filtration media, the support frame comprising at least one media engagement element arranged in supporting contact with and proximal to an edge of the filtration media on a first side of the filtration media; and

a hold down frame having a length and extending along at least the portion of the filtration media, the hold down frame comprising at least one media engagement element arranged in supporting contact with and proximal to the edge of the filtration media on a second side of the filtration media;

wherein the support frame and hold down frame are interactively assembled together to provide the frame assembly proximal to at least a portion of the edge of the filtration media with the media engagement elements of the support frame interacting with the media engagement elements of the hold down frame to support the filtration

media inbetween by contacting the filtration media at its first and second sides, and at least one of the support frame and the hold down frame further includes a wall portion spaced from its media engagement element with its media engagement element angled away from the side wall.